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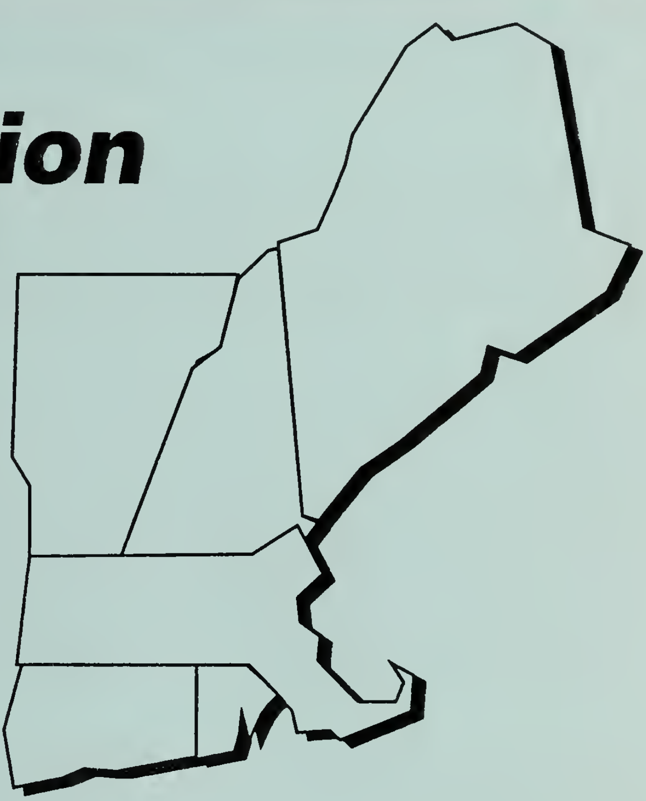
*June 1994*

NEW ENGLAND TRANSPORTATION INITIATIVE

DRAFT

# Transportation Alternative Scenarios



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# Draft Technical Memorandum

## New England Transportation Initiative Alternative Scenarios

The purpose of this memorandum is to propose three Alternative Scenarios for New England's transportation future. These scenarios will guide the remaining analyses of the NETI Project and lead to the identification of specific actions for inclusion in the Plan of Cooperation. The scenarios were developed based on the data acquired in the Inventory and Forecasting Reports, and were guided by the Objectives and Issues of Regional Significance developed during the first half of the study.

The scenarios are intended to provide broad, policy-level structure to the transportation future, rather than focusing on specific projects. To the extent that specific projects are mentioned at all, they are intended only to serve as examples. Readers should refer to the Inventory and Forecasting Reports for more extensive listings of specific projects. The analysis of the scenarios will be based on both the identification of broad, macro-level trends and on the impacts of specific projects where appropriate. The target forecast year is 2020.

The resulting Plan of Cooperation will focus on specific actions and projects necessary to achieve the desired scenario. The selected scenario may include elements from more than one of the test-case scenarios presented here. It is understood that ultimately each state is sovereign and must determine its own level of participation in the Plan of Cooperation. Those actions selected for inclusion in the Plan of Cooperation will undoubtedly require more study during which the details of implementation and the appropriate level of implementation across the region will be determined. The NETI Project offers an opportunity to pull up the artificial barriers which form state boundaries to examine the potential regional transportation network beneath. In the end, responsibility for implementing each piece of the network lies with the states.

In keeping with the approach of the NETI project to date, the scenarios will be analyzed in regard to three overriding criteria: mobility, environmental impact, and economic vitality. Since NETI is a transportation study and can only directly influence transportation policy, transportation policy is treated as the variable with the impacts of changes to be measured against the nine objectives identified in the Forecasting Report. These objectives are:

1. Minimize intra-regional competition;
2. Use transportation investment to promote economic vitality;
3. Make environmentally sensitive transportation investment decisions;
4. Use new technologies to solve capacity problems to the maximum extent;
5. Use changes in social and work patterns to minimize travel demand growth;
6. Coordinate land use and transportation planning;
7. Promote intermodalism;
8. Promote innovative and fiscally sound financing policies; and
9. Maximize intra- and inter-regional connectivity.

The scenarios are summarized in Figures 1 and 2 following the text.

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# Scenario I – Current Policies

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The changes brought about by ISTEA in greater funding flexibility and increased emphasis on intermodalism reflect the status quo in transportation planning today. Also of great relevance to transportation planning are the more stringent clean air mandates of the Clean Air Act Amendments (CAAA). These two acts constitute the key components of transportation decision making today. This scenario presumes a continuation of these policies and the approaches presently being undertaken by the states to meet the requirements of these acts, without prejudging at this point whether or not these approaches will ultimately be successful (that will be the subject of the evaluation phase). Given that ISTEA and CAAA are still relatively new laws with evolving regulations and responses, the definition of "current transportation policies" is not quite as clear as in the recent past. Best guesses were made regarding the likelihood of implementing certain actions.

Current transportation policies place a high premium on maintaining individual mobility. Despite the evolution of policy under ISTEA and CAAA, there are strong incentives for auto ownership and single-occupant vehicle travel. For families who can afford multiple auto ownership and who do not have to drive in highly congested areas, it is a highly efficient system offering maximum individual freedom and choice. The systems' weaknesses are the lack of viable alternatives for those who cannot take full advantage of an auto-oriented system (the poor, young, elderly, handicapped, tourists, etc.); and the increasing congestion levels which it has spawned.

The relative emphasis given to each major mode will continue to follow current policies. While ISTEA will give some impetus to intermodal planning and the development of intermodal facilities, planning will still occur largely along modal lines and funding levels will reflect current trends including the underfunding of ISTEA itself.

The funding levels necessary to preserve the existing highway physical plant in good working order will continue to lag behind inflation, while still providing for limited capacity expansion projects. The latter will go ahead in a relatively uncoordinated fashion based on funding availability, environmental approvals and the traditional political process. Capital funding of public transit will experience modest increases consistent with the greater flexibility to shift funding between transit and highways provided by ISTEA. The trend toward decreasing federal operating subsidies in medium to large urban areas will continue. Abandonment of rural intercity bus service will continue. Urban service in locations such as Boston and Hartford will be enhanced by High Occupancy Vehicle (HOV) facilities as currently planned. Intercity service will face increasing competition from improved rail service.

Passenger rail expansion and improvement will be limited to those projects currently in the advanced Environmental Impact Statement (EIS) stage or beyond. The Northeast Corridor Improvement Program, including electrification to Boston and high speed trainsets will be completed, as will the extension of Amtrak service from Boston to Portland, Maine. Commuter rail projects could include primarily the most advanced projects in the Boston area – the three branches of the Old Colony line, and the Newburyport, Worcester, and

Taunton extensions. In addition, expanded service could be provided on the Hartford to New Haven route in Connecticut, on MBTA service between Boston and Providence, and in Burlington, Vermont. Current seasonal recreational train service such as New York to Cape Cod and Portland to Sunday River would continue, but only a few new services such as the Vermont tourist loop would be added. Other projects will be studied with perhaps preliminary implementation steps undertaken.

Freight rail service will continue generally as it now operates, with limited double-stack clearances connecting to terminal facilities available only west of Worcester for container traffic and west of Framingham for tri-level auto carriers. Some expansion of waste material hauling should be expected consistent with current trends. Motor carriers will remain the largest freight hauling mode for both short and long distances. Existing efforts by state governments to facilitate truck/rail intermodal coordination will continue. Based on current trends, some continued improvement in regional regulatory coordination can be expected as well as initial implementation of Intelligent Vehicle Highway Systems (IVHS) such as Automated Vehicle Identification (AVI) based toll collection and credential filings and verification.

Logan Airport will continue to function as the service hub for all types of New England air service. Fare disparities between Logan and the second tier of regional airports may continue to limit the growth potential of these facilities and their ability to relieve air-side congestion at Logan. Procedural and infrastructure improvements sponsored by the FAA and Massport will be used to mitigate these problems to the extent possible. Some regional airports will experience abandonments and downgrading of services from jet to turboprop. The potential for new capacity made available by continued abandonment of military facilities will be addressed on a case-by-case, or at best a state-by-state basis.

On the ground side, access to Logan will be improved by the completion of the Third Harbor Tunnel, expansion of suburban express bus services, and establishment of South Station as a remote terminal. No direct rail access will be provided. Parking, as a matter of public policy, will become increasingly constrained which, combined with the HOV facilities included as part of the Third Harbor Tunnel approach roads, will lead to some modal shifting. Access to all other New England airports will remain overwhelmingly auto based.

Financing of airports will be increasingly based on Passenger Facility Charges (PFCs). It is anticipated that the Airport Improvement Program (AIP) and Essential Air Service Program (EAS) will continue although at decreasing real funding levels. Funding availability for general aviation airports will continue to be problematic since most PFC revenue goes to commercial facilities where it is collected.

New England ports will continue to serve primarily as importation points for petroleum products. While some ports may thrive due to niche markets such as Eastport (exportation of forestry products) and New Bedford (importation of fresh fruit), others will decline. Some of the Connecticut ports, Portsmouth, and Providence appear to be in particular jeopardy. The lack of regional cooperation may make it difficult to compete with larger mid-Atlantic facilities for the major container and auto markets which are displaying strong tendencies for consolidation at a few key ports. This approach is also likely to result in the less than optimal allocation of scarce public resources on the enhancement of too many facilities which prove not to be economically viable. Consistent with current trends, minimal dredging for

maintenance or improved operational capability will occur. Ferry services will remain essentially unchanged.

As the above discussion indicates, air, autos and motor carriers will remain the dominant transportation modes in New England, with the potential for ever increasing levels of congestion at certain facilities. Responses to this situation will be largely individualistic and market driven, with potentially negative consequences for New England's economic growth rate which is already forecast to be about three-fourths that of the nation as a whole. Responses could include service abandonments by both air and motor carriers; peak spreading; compromises on safety of operation; and diversion to other modes or locations.

Commuting trends are likely to continue the pattern outlined for the last 20 years in the Forecast Report, with continued increases in vehicle ownership, miles traveled, and both home to work and off-peak auto travel. While the relative rate of increase may slow for awhile, the maturation of the baby boom echo generation later in the forecasting period, increasing immigration levels, and levels of female participation in the work force may provide another upward boost. Percentage growth rates in indicators of auto travel are likely to be slower than in the previous 20-year period. The share of trips made on transit and ridesharing may continue to decline as origin/destination patterns and work hours become more diffuse. One possible counterveiling trend is the aging of the baby boom generation. In the normal course of events, older people would be expected to travel less. However, one should expect that this generation will try to maintain the mobility levels which they have come to take for granted in their lifetimes, placing increasing strain on the safety of automobile travel as their skills diminish. This phenomenon has already been experienced in Florida. Telecommuting and teleconferencing will continue to grow due to market forces expanding the availability of electronic equipment. Government involvement will be limited to small demonstration projects as presently the case.

New England should expect most economic growth to occur in the service sector with continued stagnation or decline in the total number of manufacturing jobs. Canadian trade can be expected to provide an economic boost to Vermont and to a lesser extent Maine. The GATT and NAFTA agreements can be expected to provide further boosts to export-related activities, as well as the possible reorientation of the Southeast Asian trade routes toward the Atlantic coast. However, the transportation constraints noted above may prevent New England from taking full advantage of these opportunities.

Institutionally, the six states of the region will continue to advance the regional agenda which is currently active including the NETI process itself, IVHS implementation particularly in the commercial vehicle sector, and CAAA initiatives such as NESCAUM and the OTC. Investment decisions will continue to be made on an individual state basis. Financing of transportation investment will remain heavily dependent on fuel taxes, user fees, and state and federal subsidies which do not particularly reflect the costs and benefits of the actions relative to other choices. The private sector role in the provision of transportation services will continue to increase slowly consistent with current trends.

The emphasis of mobile source CAAA attainment strategies, as defined in the current State Implementation Plans (SIPs) for Air Quality, will continue to be on reducing motor vehicle emission rates, accomplished through fuel strategies, such as Stage II vapor recovery and

reformulated gasoline, and vehicle emission control technology programs such as enhanced inspection and maintenance. Voluntary employer-based Transportation Demand Management (TDM) programs, and government sponsored ridesharing, flextime, and transit pass programs will continue at current levels except where stronger actions are mandated such as in southwestern Connecticut. Clean and alternative fuel programs will focus on large government and commercial fleets in designated areas as required by the CAAA and the National Energy Policy Act, supported by the various electric vehicle and other demonstration programs being carried out under the auspices of the Northeast Alternative Vehicle Consortium. Implementation of a Low Emissions Vehicle (LEV) standard throughout New England will follow the positive vote of the Ozone Transport Commission (OTC). This standard will permit achievement of LEV targets through a variety of mechanisms and does not mandate implementation of a Zero Emitting Vehicle (ZEV).

Land use and growth management planning will remain primarily a local responsibility responsive to a variety of market and institutional forces. Wetland protection policy will continue to be driven by the Corps of Engineers methodology and will be focused primarily on responses to individual transportation projects rather than a systemic approach.

New England transportation will continue to be highly dependent on imported sources of petroleum with no emergency contingency plans or long-range strategic plans in place to respond to supply disruptions.

## Scenario II – Moderate Change

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This scenario is characterized by increasing funding levels for certain types of projects, experimentation with different funding mechanisms, greater intermodal connectivity, greater intra-regional cooperation, and more aggressive demand and growth management programs. It is intended to mitigate the problems which may result from the status quo: the ability of the states to meet environmental mandates, slow economic growth, increasing congestion among a limited number of key facilities and modes, and the inefficient use of resources on destructive intra-regional competition. It aims to achieve these goals through a combination of government programs, voluntary actions, and a series of incentives and disincentives. This alternative would seek to preserve the advantages of the existing transportation system, while providing viable alternatives for those who cannot take full advantage of the system, and developing strategies to reverse the trend toward ever increasing congestion levels in certain modes and facilities.

The existing highway system would be preserved in reasonably good working order. Capacity expansion projects would be advanced on the basis of systematic criteria, including the following: safety, severe congestion, inclusion of HOV or other intermodal elements, lack of feasible alternative solutions, regional environmental and economic costs and benefits, and linkage with demand and growth management strategies. Additional funding for transit operating expenses would also be provided. Rural and urban intercity bus service would be enhanced and combined with HOV facilities where appropriate. Greater highway design flexibility will be afforded to take into account funding reality, physical constraints, and the intended purpose of the facility.

The New England states would voluntarily agree on a regional intermodal freight container facility strategy focused on a range of options for which a small number of key hubs will be selected from among Boston, Worcester, Ft. Devens, Davisville, Pease, Portland, and others. Consensus on the appropriate role and investment strategy for these and other facilities would be voluntarily achieved through a regional study. This study would lead to the implementation of a regional investment strategy and corresponding marketing strategy since the ultimate success of the program will depend on convincing the private shipping companies and industries to use the facilities which are developed. These private interests should be an integral part of the study process. The New England states should also seek to engage U.S. DOT in a dialogue on how to make New England a key node in national and international freight transportation. The implications of technological developments which will likely result in larger rail and truck equipment and containers will also be considered. It would be anticipated that among the possible results of the study would be programs for the improvement of double-stack service west of Worcester on the Conrail mainline; an agreed upon strategy for extending double-stack capability east of Worcester; double-stack capability between Davisville and the P&W mainline in Rhode Island; double-stack capability on the Central Vermont line; and other selected double-stack opportunities. This strategy would create a critical mass necessary for economically efficient double-stack rail service in New England.

By defining a discrete number of critical ports with double-stack rail connections and incorporating environmental considerations into the analysis and the environmental community into the process, it would be anticipated that environmental approval could be obtained for dredging activities essential to maintain and expand these facilities. Opportunities would be pursued to enhance ferry services which perform regional freight transportation functions, such as Maine to Nova Scotia and Burlington to New York. Apparent ISTEA restrictions on the use of funds for intermodal freight facilities would be eliminated. Costs and revenues associated with implementing the strategies would be shared in an equitable manner among the states in order to provide incentives for states to forego individual development strategies.

The motor carrier industry would be converted to full IVHS operation where appropriate; most transactions (except inspections) would be handled electronically; Automated Traveler Information Systems (ATIS) would provide real-time information assisting truckers in planning routes to avoid severe congestion improving both their operational performance and reducing the impacts of motor carriers on urban congestion and air quality. Electronic toll collection with time period-based pricing will be implemented in selected corridors to support congestion pricing strategies. Economic regulations and fees would be fully standardized within New England and made more consistent with the rest of the nation.

The combination of a regional approach to freight management and improvements in the motor carrier regulatory climate may enable the New England states to maximize the efficiency of freight delivery to support economic vitality while minimizing some of the externalities which freight transportation generates. A shift of some long-haul freight traffic from motor carriers to rail service may be achievable, while enhancing the operation of smaller trucks performing final delivery functions in urban areas. A true intermodal rail/truck system could be established which would benefit New England-based trucking interests which would obtain final shipment business from the railroads that is presently handled by long-haul truckers operating from outside the region.

In return for the improvements in truck operations achieved by IVHS programs, enhanced cooperation among the states on fees and regulations, and intermodal rail connections, the motor carrier industry should be expected to participate in a more aggressive voluntary clean and alternative fuels program than currently planned under the CAAA and the National Energy Policy Act. The New England states will support this effort by means of a regional alternative fuel infrastructure strategy.

Passenger rail services would be expanded beyond the projects included in Scenario I to include others which are in earlier planning stages today. These might include enhanced Amtrak Inland Route service; establishment of direct Boston to Montreal service via the presently abandoned Concord to White River Junction line; enhanced connectivity between southern and northern New England rail service by means of the North Station-South Station connector in Boston or other regionally acceptable strategies; and expansion of Amtrak service to points north of Portland. Some of these services may also provide opportunities for enhanced freight service as well. In addition to service expansion, the quality of intercity service will be improved by means of greater frequencies and passenger amenities. Commuter rail service examples include Boston to southern New Hampshire, Boston to New Bedford/Fall River, and Old Saybrook to Westerly to Providence. Additional

seasonal recreational trains would be encouraged along with better schedule coordination with local transit networks.

As in the freight sector, voluntary efforts would be made to develop a regional passenger air strategy. The goal of this strategy would be to enhance the competitive position of a series of regional airports such as Portland, Pease, Manchester, T.F. Green (Providence), Worcester, and Bradley (Hartford). The objective would be to provide low cost jet service, effective schedule coordination and connecting flights, and effective ground access for intermediate-distance trips to relieve both air and ground-side congestion at Logan. The efficiency and effectiveness of international and long-haul domestic service would be enhanced at Logan and possibly one other regional facility. In furtherance of these objectives, Massport would take measures to relieve Logan congestion such as possible construction of a new commuter/ general aviation runway. This strategy would also seek to develop a comprehensive regional approach to general aviation services and the reuse of abandoned military air facilities.

The New England states would seek to negotiate with the airline industry to determine how this regional approach could be implemented and what infrastructure and regulatory steps would be required of the states. Opportunities would be sought to intervene at the federal level in order to encourage the development of low cost regional carriers.

As part of the effort to relieve airport congestion problems, rail service would be extended to Logan from Airport Station via either an extension of the MBTA's Blue Line or a self-contained automated guideway transit system (people mover). A corridor for such an extension is incorporated in the Central Artery/Third Harbor Tunnel plans. As in Scenario I, diversion to alternate modes would be expected to occur due to congestion on single-occupant vehicle roadways and parking constraints at the airport. The provision of rail service to other airports is more problematic due to the lack of constraints on auto travel. However, the potential for implementing such service to T.F. Green outside of Providence and to Bradley outside of Hartford should be explored since strategies for doing so already exist. This should be done in conjunction with the potential for these airports to significantly increase passenger demand as a result of the regional air travel strategy discussed above.

Improved preservation of the existing transportation system and the improvements discussed above will require additional funding. This would be provided by full federal funding of ISTEA and successor legislation achieved through meaningful, incrementally implemented increases in the federal fuel tax all of which would be applied to transportation spending and none to deficit reduction; equalization of state fuel taxes at the highest common denominator with annual increases calibrated to maintain targeted funding levels; and selected highway congestion pricing demonstration projects. Transit funding would be provided by increasing federal operating support thereby halting a long-term decline, and abolishing state prohibitions against the use of state fuel tax revenue for transit.

A stronger approach to travel demand and growth management planning would be developed in an effort to mitigate the trends described in Scenario I. This would be primarily aimed at new development and new infrastructure projects. As described earlier in the highway discussion, approval of specific projects (potentially in any mode) or corridor plans could be made contingent on the implementation of a variety of demand management, land use, or congestion pricing strategies. Examples of this approach already exist in the Maine

Route 1 Corridor Study; the Pease Joint Development study; the Vermont Bypass Road Program; and frequent state efforts to link highway access controls with defined levels of service. Linkages could include HOV facilities; Transportation Demand Management (TDM) programs; employer ridesharing, parking and telecommuting/work hour programs; peak period congestion pricing balanced across all modes of access; and multi-use, higher density, cluster developments around the facility. In addition to facility or corridor specific actions, government agencies (particularly at the state level) would take the lead in implementing travel demand management strategies among their employees.

State growth policies would explicitly address the land use/transportation connection in negotiating with communities, regions and employers on infrastructure improvements. Given that funding will always be constrained and choices required, states will favor those infrastructure projects which achieve defined public policy objectives in enhancing mobility, economic vitality, and environmental protection. A policy of this type can only be implemented on a New England region-wide basis in order to prevent a continuation of the current tendency among businesses to play one state off against another for the best deal regardless of overriding public policy considerations.

In regard to community planning, policies which minimize the demand for movement by grouping a variety of functions in close proximity would be favored for transportation infrastructure investment. Such policies would also tend to preserve the traditional New England way of life focused on coherent, multi-functional city and town centers as opposed to extensive strip mall and suburban sprawl development.

As discussed above, a more aggressive clean and alternative fuels program would be implemented on a voluntary basis in coordination with the motor carrier industry, and the New England states would coordinate the development of a regional infrastructure to support one or more alternative fuel options. A common regional approach to implementation of a Low Emission Vehicle (LEV) standard would be achieved throughout New England. CAAA attainment strategies would go beyond the current focus on vehicle emission control strategies to include the types of growth and travel demand management strategies discussed above and targeted toward high growth areas. The role of mobile sources in emissions trading would be increased. New advances in emissions control technologies would be implemented on off-road vehicles, trucks, and buses.

The reauthorization of the Clean Water Act will likely lead to more stringent controls on urban run-off thereby impacting highway design options. The New England states will coordinate a common position and take a proactive stance in the negotiations leading up to the reauthorization. There will be increased coordination between the U.S. Army Corps of Engineers and state resource agencies in expediting the review process, developing more consistent regional policies, and disseminating new ideas in resource protection. Several demonstration projects promoting these objectives will be undertaken in conjunction with specific infrastructure projects.

This scenario would also see the development of a New England regional energy contingency plan to address short-term disruptions in the fuel supply. However, it would still presume long-range dependence on petroleum-based transportation systems.

# Scenario III – Major Change

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Scenario III aims to achieve the same basic goals as Scenario II – improved mobility, economic growth, and environmental protection – but seeks to do so through stronger government intervention and related private sector actions rather than through the series of voluntary cooperative arrangements and incentives and disincentives described in Scenario II. Some of the specific actions for achieving these goals, such as better coordination of regional freight and air passenger facilities, are the same as in Scenario II so they will not be repeated in detail here. The difference is in the means to achieve them.

The main substantive changes are shifting funding priorities from further expansion or other enhancement of the predominant modes today which experience significant congestion levels – basically single-occupant auto and air travel – to the expansion of a high occupancy vehicle and mass public transportation-oriented society as opposed to an individually-based transportation system which forms the core of Scenarios I and II. The second major shift would be the development of strong travel demand and growth management policies and mandates at the state and regional levels throughout New England, as opposed to the voluntary incentive-based system described in Scenario II.

The existing highway and air sectors would be maintained in good working order, but there would be minimal capacity expansion particularly in the provision of additional single-occupant auto capacity or intermediate-distance air service. There would be full implementation of highway IVHS systems (and new air traffic control technologies discussed in other scenarios) to ensure maximum utilization of existing facilities. A fully operational Automated Traveler Information System (ATIS) would be broadly and routinely available for all forms of travel in New England providing real-time data on travel conditions and alternatives. Highway projects which serve as intermodal connectors would be advanced with major HOV components where appropriate.

High Speed Ground Transportation Services (HSGT), on new or modified alignments, would be expected to handle the bulk of the growth in long-distance auto trips and intermediate-distance air trips. These might include conventional high speed rail, Maglev, rubber-tire technologies, or other new and emerging technologies and operating strategies. In addition, a major increase in teleconferencing would be expected to dampen demand increases for air travel. Major new investments would be made in urban commuter rail and bus services including HOV and park and ride facilities. A true recreational transportation system would be established incorporating rail services with new, more extensive local distributional networks. Greater emphasis would be placed on passenger ferry services to seacoast recreational destinations. New England rail freight service access to national and international markets would be strengthened via major new Canadian and cross-Hudson gateways.

Clearly, while the state of California could contemplate making such a major shift in emphasis on its own, it is beyond the power of any single New England state to do so. This could only be accomplished as a regional strategy which also included close coordination with the state of New York. Transportation policy cannot change in isolation from other

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public policies and be successful. Increasing congestion on the highway and air side would likely result in significant diversion of trips and cargo to the HSGT system. However, many factors including price and convenience go into modal choices, and society is presently not organized to respond effectively to a more mass transportation-based transportation system. This change would surely be as significant as the changes brought about by the Interstate Highway Programs and expansion of air services and facilities which occurred in the 1950s and caused the original shift from a mass transportation-based society. The societal changes which resulted were generally little understood or planned for, and many of the problems discussed in these scenarios result from that sequence of events.

Key elements in achieving this shift would include a greater state and regional role in growth management planning; transportation pricing strategies; full implementation of new technologies; new institutional structures; and a public/private partnership beyond anything currently contemplated.

The focus of land use and growth management planning would need to shift from the local level to the same levels which dominate transportation planning today, the states and the sub-state regional level of Metropolitan Planning Organizations (MPOs) in urban areas and Regional Planning Agencies (RPAs) in rural areas. Such authority is relatively common among regional or county-level agencies in other parts of the country. Vermont Acts 200 and 250 and the Maine Sensible Transportation Act represent the earliest steps to date in this direction in New England.[1] Proposed legislation in Massachusetts and Vermont would take these concepts a step further by designating growth centers.

The plans developed by regional agencies would need to conform to state transportation plans and growth management plans which in turn would need to conform to an agreed-upon New England-wide shift in priorities. State-level guidance and coordination of growth policies would provide a framework within which regional and local land use planning would occur. In particular, there would be an emphasis on mixed-use cluster style development at key intermodal transportation nodes in order to minimize the number and length of single-occupant vehicle trips.

A major land bank program would be established to forestall development in protected areas. Widespread regional emissions trading involving the use of mobile sources would be used as an additional strategy in achieving air quality attainment mandates. Wetlands protection would be done in a proactive systemic approach rather than on a reactive, project-specific basis, including widespread wetland banking and trading. A starting point for both of these initiatives would be a regional survey to identify critical natural resources and the costs and benefits of protecting them. There would be widespread market penetration of alternatively fueled vehicles for personal as well as commercial use, with accompanying infrastructure development.

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1/ The Maine Sensible Transportation Act provides regionally-based citizen input into project planning and requires that alternatives to facilities serving single-occupant auto travel be considered. Vermont Act 250 requires that projects which alter 10 or more acres meet 10 performance criteria, and conform to local and regional plans. Vermont Act 200 requires projects to conform with regional and local comprehensive plans.

Pricing strategies would be used to further encourage widespread mode and travel time shifting, and to finance the new HSGT system. Strategies would include large across-the-board increases in total fuel tax rates to European or Canadian levels; congestion pricing (of both highway and air facilities); and tax benefits for clean and alternative fuels. Medium and large employers and employment centers would be required to implement aggressive travel demand management strategies, telecommuting opportunities, and clean/alternative fuel programs. Telecommuting and teleconferencing would become a New England-wide growth industry.

The implementation of a mass transportation-based society may enable New England to reduce its long-term strategic dependence on petroleum imports.

The difficulties inherent in implementing a dramatic change of this nature in one sector of the country are fairly obvious. On the one hand, a stronger centralized governmental authority is needed at least in some cases. Alternatively, a public/private sector social compact is required to prevent a potentially major outflow of business activity to other parts of the country until the benefits of the change can be demonstrated.

As sovereign entities, each New England state must retain authority over most planning activities within its borders. However, precedence exists for multi-state, intermodal authorities with specific well-defined responsibilities. Probably the most well-known example is the Port Authority of New York and New Jersey. To solve part of the coordination problem, the creation of a New England Intermodal Authority is proposed. The proposed authority would be responsible for regional planning of fixed point port facilities (both sea and air), intermodal facilities, and interstate ground transportation facilities. Responsibility for operating the facilities would remain in state, local, or private hands.

A regional authority could be the most direct way to achieve true regional planning; a targeted investment strategy; regional trade-offs; negotiating strength with private carriers and shippers; international economic competitiveness; and cost/benefit sharing among the states. The problem with authorities of this type, and the reason they have fallen into disfavor, is their tendencies to become too big and too divorced from popular opinion and the political process (which are also exactly the reasons they are created.) One approach to preventing these abuses is to separate the planning function (which would be done regionally) from the operating function which would remain local or private. Other approaches include ensuring through the enabling legislation the ability of each state to appropriately influence decision making and to ensure that the authority is fully accountable to public participation, environmental protection, and other laws designed to protect the public from arbitrary government decision making.

Achieving private sector support for this scenario is clearly critical. A change of this magnitude, while initiated by government, can only succeed as part of a social compact between government and the private sector. The most challenging aspect of implementing this change will be to achieve this consensus, particularly in a single part of the country.

## Figure 1. Scenarios by Policies

| Policies | Scenarios | | |
|---|---|---|---|
| | Current Policies | Moderate Change | Major Change |
| Driving Force | • Market | • Market<br>• Voluntary cooperation<br>• Incentives/disincentives | • Government mandates<br>• Public/private social compact |
| Institutional Arrangements | • Existing cooperative efforts | • New cooperative efforts | • New England Intermodal Authority |
| Revenue Sources | • Existing fuel taxes and user charges | • Meaningful fuel tax increases<br>• Congestion pricing demonstrations | • Major fuel tax increases<br>• Major congestion pricing implementation |
| Revenue Distribution | • Current trends including modest transit/rail increases | • Higher funding levels<br>• Greater flexibility at state/federal levels | • Major shift to HSGT and mass transportation |
| Passenger Transportation | • Increasing dominance of auto and air systems with increasing congestion<br>• Individually-based transportation | • More creative and cooperative use of existing auto/air facilities<br>• More emphasis on mass transportation | • Major shift to HSGT and mass transportation |
| Freight Transportation | • Continued dominance of motor carriers | • Increasing importance of rail for selected long-haul markets<br>• Targeted port strategy<br>• Enhanced truck/rail coordination | • Major shift to HSGT and intermodal coordination |
| Growth Management Planning | • Locally based; little transportation coordination; market driven | • Demonstration-based approach targeted to specific new developments | • Regional approach conforming to statewide transportation plans |
| Travel Demand Management (TDM) | • Voluntary TDM and state sponsored ridersharing programs | • Aggressive public agency internal programs<br>• Negotiated approach tied to new or modified development and infrastructure improvements | • Mandates for all but small employers<br>• Routinely incorporated in operation of existing activity centers |

Figure 1. Scenarios by Policies (continued)

| Policies | Scenarios | | |
|---|---|---|---|
| | Current Policies | Moderate Change | Major Change |
| Water Resources | • Wetland protection on case-by case basis | • Urban runoff regulations modified by Clean Water Act reauthorization<br>• Better state/federal coordination | • Systematic approach to wetlands protection and regional banking |
| Air Quality | • Vehicle emissions control<br>• Voluntary TDM<br>• LEV standards | • More aggressive voluntary employer programs and growth management plans tied to specific infrastructure improvements<br>• Emissions control on heavy-duty and off-road vehicles | • Mandatory travel and growth management programs<br>• Shift from auto-based to mass transportation-based society |
| Energy | • Petroleum-based transportation system | • Contingency plans for petroleum supply interruptions | • Reduction in long-term dependence on petroleum-based systems |
| Alternative Fuels | • Current CAAA and NEPact large fleet mandates | • Greater commercial fleet participation in return for IVHS implementation, regulatory reform and infrastructure development | • Widespread penetration of personal and commercial markets |
| Telecommuting/ Teleconferencing | • Technology-driven growth and small government demonstration projects | • Large public agency demonstration projects<br>• Greater private sector participation tied to specific infrastructure improvements | • Mandates for all but small employers<br>• Major growth industry |
| IVHS | • Modest IVHS implementation in commercial sector | • Significant IVHS implementation in commercial sector where appropriate | • Full commercial and passenger IVHS implementation where appropriate |

# Figure 2. Scenarios by Mode

| Mode | Scenarios | | |
|---|---|---|---|
| | Current Policies | Moderate Change | Major Change |
| Highways | • Inadequate system preservation funding<br>• Limited capacity expansion approved on individual basis | • Improved system preservation funding<br>• Capacity expansion based on defined criteria consistent with other public policies | • Full system preservation funding<br>• Capacity expansion only for intermodal connections and high occupancy vehicle facilities |
| Motor Carriers | • Modest IVHS implementation and regulatory standardization<br>• Increasing dominance of all freight markets | • Full IVHS and regulatory standardization<br>• Some shift of long-haul markets to rail<br>• Improved rail/truck intermodal coordination<br>• Enhanced clean/alternative fuel programs | • Full IVHS implementation in personal vehicle market<br>• Major investment shifts to multimodal strategies |
| Intercity Bus | • Continued rural abandonment<br>• Some urban growth due to HOV facilities<br>• Decline in some intercity markets due to rail improvement | • Enhancement of rural services<br>• More extensive urban HOV facilities<br>• Greater intercity decline | • Integrated into HSGT strategy |
| Passenger Rail | • Northeast corridor improvements<br>• Boston to Portland completed<br>• Limited commuter rail expansion<br>• Limited tourist expansions | • Additional new intercity and commuter services<br>• Some recreational expansion and improved schedule coordination<br>• Enhanced New England connectivity | • Major commitment to HSGT<br>• Intermodal recreational system |
| Freight Rail | • Limited double-stack improvements west of Worcester<br>• Increase in waste-hauling | • Targeted double-stack improvements<br>• Increased share of long-haul market and intermodal truck coordination | • Major shift to intermodal system |

**Figure 2. Scenarios by Mode (continued)**

| Mode | Scenarios | | |
|---|---|---|---|
| | Current Policies | Moderate Change | Major Change |
| Airports | • Continued dominance and increasing congestion at Logan<br>• Conversion to smaller planes on some feeder services | • Regional system with intermediate services shifted to second-tier airports | • Intermediate services shifted to HSGT |
| Ports | • Individual port planning and investment<br>• Increasing external competition<br>• No change in ferry services | • Coordinated port planning and investment<br>• Meet challenge of external competition<br>• Increase in freight-related ferry services | • Centralized port planning and investment<br>• Meet challenge of external competition<br>• Increase in all ferry services |